MYRMECOLOGICAL TECHNIQUE

CLARENCE HAMILTON KENNEDY,
Ohio State University,
Columbus, Ohio

III. DDT Too Perfect an Ant Killer for the Collector's Use

For several years the writer has used ether in collecting ants but for cigarette smokers ether has the hazard of explosion. The forgetfulness and excitement accompanying the discovery of a nest of strange ants, if made while smoking, could permit the explosive mixture of ether and lighted cigarette. The ants would be in the nest opening and probably recoverable, but the collector on the free side of the explosion might be found to be of little immediate use.

In August of the past season at the University of Michigan Biological Station store we obtained an "aerosol bomb" of the pressure atomizer type and tried it on a nest of *Formica sanguinea aserva* Forel. This was a young nest with a mixture of the host ant *Formica fusca subsericea* Say. (This "slave-maker" has no slaves but the *sanguinea* queen enters a *subsericea* nest, makes friends and lets the latter rear her early brood until such a nest may be half full of red ants. Such nests are in the ground, the site for *subsericea*. Later the *aserva* queen and workers move to a log or stump, if available.) The nest was opened with a shovel and the aerosol directed onto the scampering ants. The latter did not drop dead at once but after a moment or two of slowing down died rather promptly. The mixture of yellow sand, black top-soil and gravel acted as a concealing background for the red and black *aservas* which had dark head, red thorax and black gaster. Right before our eyes they disappeared. By close scrutiny enough were recovered for identification but the special effort and extra time needed to obtain specimens relegated the aerosol bomb to the back seat of the automobile to be used later on cabin pests.

We had uncovered a collecting method which was too good. In collecting a method must be used in which the ants are merely slowed down but are not completely inactivated. A cool day, 40° F. to 60° F. is the best inactivator for most species. A moderate dosage of ether is the second best. The ant must be able to move at least a leg or antenna to be readily seen by the collector if it is on a continuous background of the usual nest debris of finely mixed colors. A collector soon learns the best dosage of ether to allow the recovery of completely etherized ants within a length of time useful in collecting. If the mixture of ants and nest debris is rolled or sifted so that artificial respiration is induced in the very lax sleeping ants they may recover at surprising speed and need a second etherization. Recovery varies greatly with temperature, slowly on cool days and with distressing speed in the hot sunshine when ether flashes dry almost instantly.

Thus ether is within the control of the collector while DDT and its mixtures with pyrethrum kill ants almost at once with no further help from struggling sleepy victims. The ant must move, even quite large species, to be seen easily. A dead ant does not move against the contrast of motionless soil. The contrast of a wiggling leg or even ant foot against a motionless background is the key principle of visibility. In the case cited, that of *aserva* the dark minors were especially difficult to locate.

In an earlier paper, Myrmecological Technique, II, we cited cyanide dust (Cyanogas) as a collecting aid for tree and bush ants. This also kills but the ants fall out of the background (tree or bush) onto a white cloth where they are easily found.

Thus DDT and its mixtures are too good in slowing ants down to a pace that renders them most easily collectable. We have tried it on only this one species. The can of mixture used was labeled the "Superla Junior Aerosol Automatic Atomizer with DDT," manufactured by the Standard Oil Company, Chicago, Ill. It contained 2.00% (a light dose) DDT, 0.25% pyrethrins and 5.75% methylated naphthalene as killing agents.